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FACTS

FOR ENVIRONMENTAL STUDIES

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Ministry
of the
Environment

Hon. George A. Kerr, Q.C.
Minister
K. H. Sharpe
Deputy Minister

about pollution...



SET 4

CLASS OUTINGS: SUNNYSIDE UP/DOWN

ALTERNATIVES TO WASTE DISPOSAL

RECYCLE AND SAVE OUR RESOURCES

HOW TO PUBLICIZE A RECYCLING DRIVE

SELECTING A LANDFILL SITE

NOISE STUDIES

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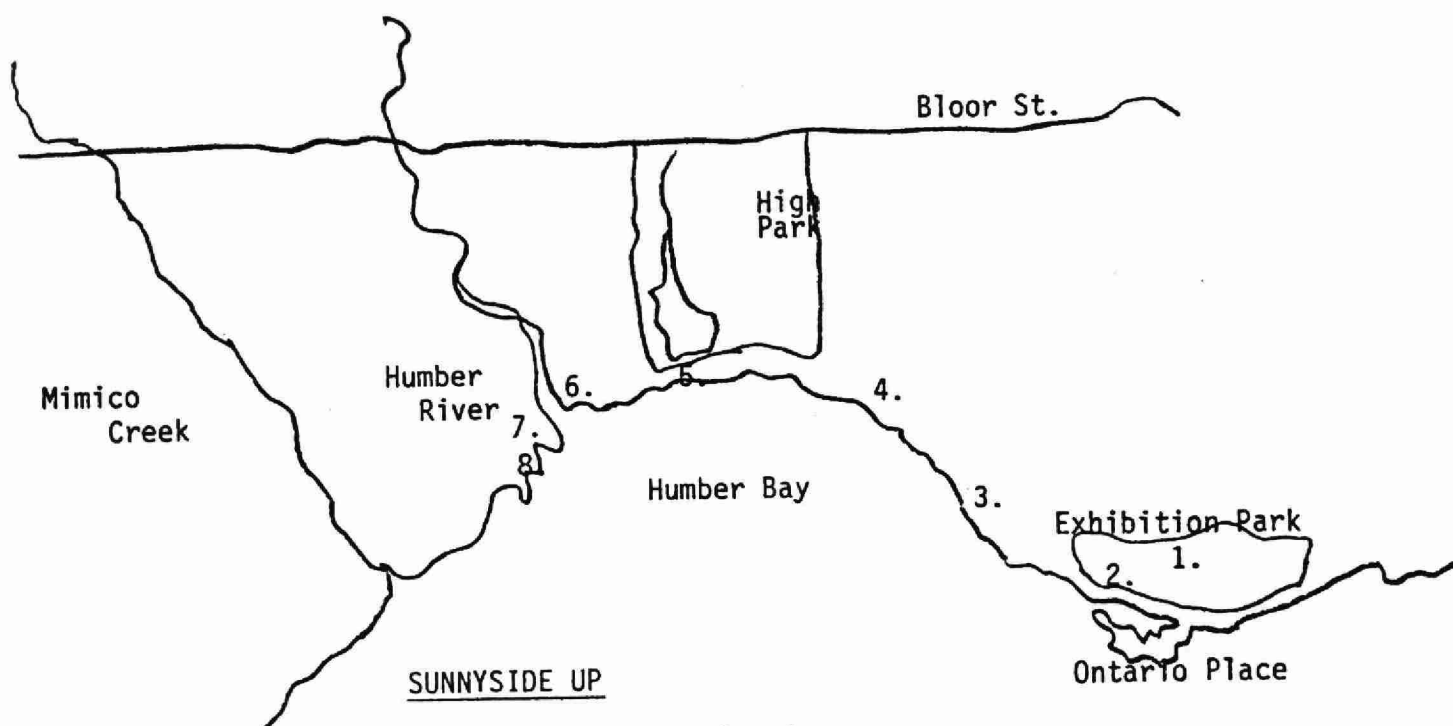
SUNNYSIDE UP/DOWN

Sunnyside Up and Sunnyside Down are two possible routes that can be taken to observe some of the Western Toronto waterfront and/or some of the High Park area. Both outings are designed as walking or cycling tours and are readily assessable by public transit. The routes lend themselves to discussions about landfill, shore erosion, Great Lake water levels, shipping, sewage treatment, animal ecology, and the historical transition of the area. In addition, Sunnyside Down includes a look at pond life and forest evolution.

The routes, descriptions and questions follow. All this information follows the numbering system shown on the maps.

SUNNYSIDE UP - THE ROUTE

(A walking or cycling route along the western waterfront from Exhibition Park to the Humber Bay Landfill Project)



Length: Approx. 5 miles in
90-120 min.

1. The outing originates in front of the Hockey Hall of Fame in the centre of Exhibition Park and proceeds from this point to the lakeshore.
2. Following the southernmost walkway in Exhibition Park westward, an excellent view of the Ontario Place complex provides a superb backdrop for a description of:
 - A. The use of landfill along the lakeshore to increase available property and parkland.
3. Utilizing the walking bridge across Lakeshore Blvd., the outing continues on Aquatic Drive where a paved bicycle and foot path originates heading west.
 - A. Explanation of the use of breakwalls to control the eroding force of wave action. In particular, it should be pointed out that a series of old lake freighters were filled with concrete and sunk across the lakeside of the Ontario Place site to protect it from erosion and rough seas.
 - B. If any ships are on the horizon, a description of the Toronto Harbour approaches would be appropriate, including the future changes with the completion of the dredging of the Eastern Gap and the land spit.
4. Following the path along the shore, a beach area is visible.
 - A. At this point, a brief description of the history of the area should include the recent expansion of the transportation corridor and the old Sunnyside Amusement Park which was a focal point in "Western" Toronto 30 years ago.
5. The path continues leading into a series of lakefront parks.
 - A. Observing the high level of water at the breakwall and the narrowness of the sandy areas of the beach, a discussion of the fluctuations of the water levels in the Great Lakes system should follow emphasizing both the natural changes and man's control of the level. (Historical data would be useful to demonstrate the changes through time).
6. Towards the mouth of the Humber River but still in the park system.
 - A. Description of the influence of people on the migration of the geese and ducks in the area. A number of Canada Geese and mallard ducks now make their permanent home in the area where the public feeds them.
7. Mouth of the Humber River. In order to get the best view, you must proceed north on Windemere Ave. to The Queensway; then west to the Humber.
 - A. Marsh area at mouth of river as it spreads out, should be excellent for wildlife.
 - B. On west bank, you will have an excellent view of the Humber Sewage Treatment Plant. On observing the external edifices of the plant, a brief description of the process could be attempted.

8. Proceed along the Queensway to Parklawn Rd. and walk or ride back towards the lake and the Humber Bay Landfill Project.

- A. At this point, an in-process observation of the method of dumping fill and the reclamation of land is available (to complement the discussion of landfill).

The end. It's only a short walk to the Queen St. streetcar.

SUNNYSIDE UP - 'STOP' DESCRIPTIONS

Stop #1 The Hockey Hall of Fame -- Simply a place to meet.

Stop #2 Ontario place -- 96 acre park; opened May 20, 1971; built by Toronto Harbour Commission for the Ontario Government; 2.5 million truckloads of fill produced three islands.

Questions: Where do you think the fill came from originally?
What, if any, are the advantages of creating Ontario Place on "islands"?
What might be the disadvantages?
Consider what differences there would be in the area's use if there had been no landfill.

Stop #3A Sunnyside breakwall combats erosion; built around 1918; usually require a wide sand or gravel beach to control erosion and the force of the waves but not in this case; Ontario Place had to be designed to prevent soil erosion and thus the 'Douglass Houghton'; the 'Victorious' and the 'Howard L. Shaw', three retired lake freighters, were filled with sand and covered with concrete. Refer to Environment Canada's "Shore Erosion".

Questions: What might happen to Ontario Place if the anti-erosion measures weren't considered?
How would the use of the park area change immediately and in two or three years without a breakwall?
Would a wide beach be practical in this area?

Stop #3B Shipping as a form of transportation; Toronto is a major port on the St. Lawrence Seaway-Great Lakes System; includes domestic and foreign goods.

Questions: What types of cargoes are best suited to shipping?
Would these and other boats pollute the water along the shore and/or out in the middle of the lake?
Are there signs of water pollution in the area? If so list them.

Stop #4 Sunnyside Beach area -- landfilled 1917-1921; notice bluff to the north and the sharp drop which represents past shore erosion; 1930 -1950's this area was an amusement park which included dance halls and roller skating rinks; Sunnyside change house was originally used by swimmers in the lake; pool built in the 1930's.

Questions: Why was a pool built so close to the lake?
Why is the beach so narrow?

Comment: Consider or imagine a series of buildings like the Palais Royale, merry-go-rounds, roller coasters, and old cars driving along a four lane road in this area. That's the way it was.

Stop #5 Great Lake Water Levels -- combination of rainfall, evaporation, inflow and outflow; controlled by dams at St. Mary's River between Lake Superior and Lakes Michigan and Huron and at Cornwall on the St. Lawrence Seaway. Water fluctuates with variation in the rainfall. Refer to Environment Canada's "What you always wanted to know about Great Lakes Levels."

Questions: What effects on the shoreline and the amount of parkland would a meter rise in water level have?
What effect would water level changes have on shipping?
What effect would water level rises have on landfill sites?

Stop #6 Geese and ducks are migratory birds that normally fly to the south in the fall and back north in the spring; some ducks and geese are now year-round residents of this area.

Questions: Why would the birds over-winter despite the cold?
What do you think is the main reason for migrations?
What foreseeable problems may develop if thousands of birds loose their migratory instinct and then cause normal migratory birds to also stop-over in the area for the winter?

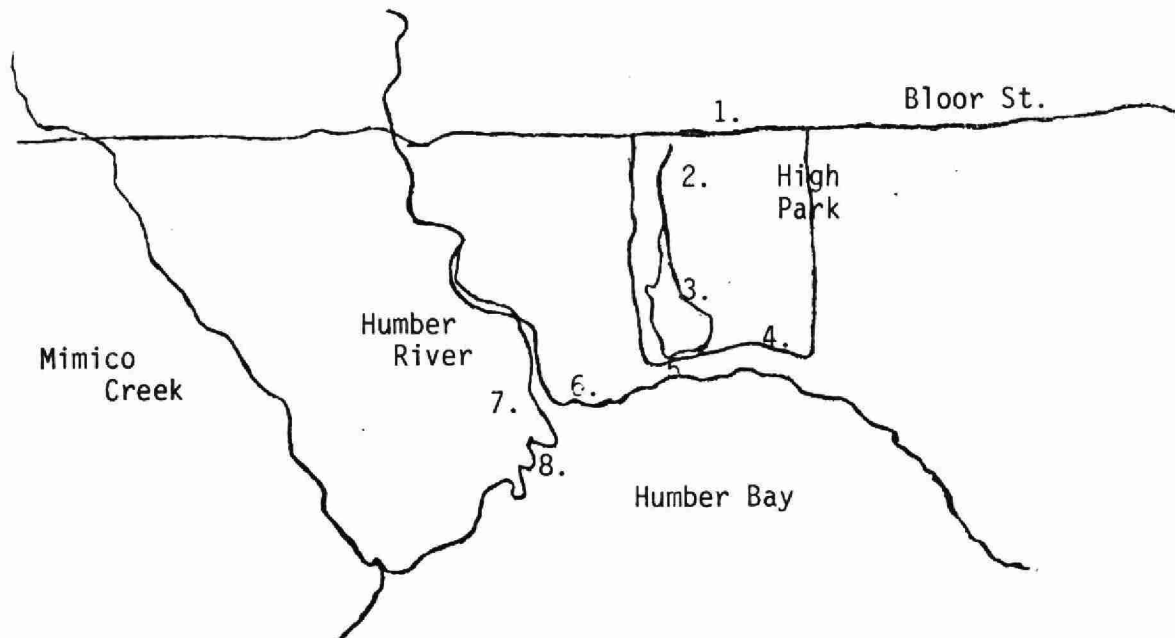
Stop #7 Humber Sewage Treatment Plant -- Primary and Secondary treatment of sewage -- does not remove phosphates. Outflow pipe extends out into the lake through the easternmost section of landfill.

Questions: What effect might this plant have on the marsh at the mouth of the Humber and the aquatic animals living there?
What makes the continuous flame in the western part of the plant?
What might be done with the waste that is removed from the water?

Stop #8 Landfill site similar to the filling of the Ontario Place islands except that this one is still in progress.

SUNNYSIDE DOWN - THE ROUTE

(A walking or cycling route for viewing the natural components of High Park and the changing faces of the western waterfront as far as the Humber Bay Landfill Project)



1. The outing originates on the southwest corner of Bloor St. and High Park Blvd. and from this point enters the park.
2. Follow the road to the west of the baseball fields, a sharp drop in the form of a ravine can be seen to the right.
 - A. A discussion of the use of trees and shrubs to curtail erosion should include a classification of the type of ground cover in general. (i.e. natural, planted, climax, pioneer).
3. Follow the Parks Dept. road down the hill near Grenadier Pond, a link is made with a walking and cycling path along its shore.
 - A. Explanation of history of area and pond.
 - B. Discussion of pond life, swamp to the north end and fish stocking of the pond.
4. At the south end of the pond, the foot path should be followed east along the Queensway to Howard Ave. At this point, walk south towards the lake and start westwards on the bicycle path along the south side of Lakeshore Blvd.
5. The path continues leading into a series of lakefront parks.
 - A. Observing the high level of water at the breakwall and the narrowness of the sandy areas of the beach, a discussion of the fluctuations of the water levels in the Great Lakes system should follow emphasizing both the natural changes and man's control of the level. (Historical data would be useful to demonstrate the changes through time).

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8. Proceed along the Queensway to Parklawn Rd. and walk or ride back towards the lake and the Humber Bay Landfill Project.
 - A. At this point, an in-process observation of the mechanisms of dumping 'clean' fill and the reclamation of land is available to complement the discussion of landfill.
9. The end. it is only a short walk to the Queen St. streetcar.

SUNNYSIDE DOWN - 'STOP' DESCRIPTIONS

Stop #1 The sharp drop from the road at this site goes down to Grenadier Pond; signs of erosion are seen in crevices in the side of the hill; the area is allowed to grow over and trees and bushes produce a mixture of vegetation to hold the soil.

Questions: Is this a natural growth of trees? Are there any signs that these trees are planted or is the dispersal more random?
Compare the trees on the right side of the road to those on the left; Which group is better suited as an animal habitat?

Stop #2 Grenadier Pond is supplied with water from a stream at the north end of the pond; the stream receives run-off water containing eroded soil giving rise to the muddy conditions near the mouth. Named after some British Grenadiers who are said to have crashed through the ice and drowned around the time of the War of 1812; the pond is stocked with fish which are adapted to marshy environments. The outlet of the pond is filtered into a pipe at the southwest end and has been diverted underground to come out south of the Seaway Towers on the Lakeshore. At one time the pond was probably a tidal pool separated from the lake by a wide sandbar.

Questions: What effect would the landfilling of the lakeshore have on the pond?
Try to identify any fish along the edge of the pond.
Why are there such steep sides to the pond?
Why would wild ducks and geese stay here all year round?
What might the availability of a wintering spot in Toronto have on the migratory behavior of certain duck and geese species?
How might a behavior change be detrimental to the species?

Stop #3 see SUNNYSIDE UP.

(These self-guiding tours were prepared by "Probe It", a Pollution Probe program sponsored by the Ontario Ministry of the Environment through an Experience '76 grant).

FACTS

FOR ENVIRONMENTAL STUDIES

ABOUT WASTE



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ALTERNATIVES TO WASTE DISPOSAL

A. WASTE IS MATERIAL THAT IS NO LONGER USED OR NEEDED IN ITS PRESENT FORM AND LOCATION

Activity One

1. What is waste?
2. What are some of the other names we have for waste?
3. Using a good dictionary, look up and discuss the cultural origins of the words garbage, trash, junk, refuse, rubbish, scrap. List the above words in their order of offensiveness to you. Does this list have any relation to the origin of the word.
4. What types of waste are produced from an average household? Which ones are in the greatest quantity? A display can be set up illustrating the different types.

Activity Two

Identify the types of waste that are produced from the production, consumption and disposal of a can of beef stew. The main components to be traced are meat, potatoes, tin can, paper label.

Example: Meat

grain to steers	steers eat grain	steers slaughtered	we eat
grain waste	manure waste	slaughter waste	sewage waste,
			table scraps

B. PRESENT SOLID WASTE DISPOSAL CAUSES POLLUTION OF OUR AIR, WATER AND LAND

Activity Three

1. What is meant by "throwing something away?"
2. Where is away?

Activity Four

Incineration - Burning - Air Pollution

This activity should take place in a laboratory with the proper equipment such as goggles, bunsen burner, tongs and a fume hood.

Proper Ventilation and Safety is stressed, especially for plastics.

1. Break the class into teams with 5 to 10 materials each to burn.
2. Prepare a data sheet or a chart. Note:
 - a. Initial weight and residue weight of each item burned.
 - b. Color of flame and smoke.
 - c. Odours produced.
3. Burn a variety of household waste including food, metal, plastic, paper, etc.

Discussion Questions:

- . Why is incineration considered a popular method of disposal by some people?
- . What happens to the residue or items that do not burn?
- . Are particles detached and carried away in the smoke?
- . What happens to these particles? Why are they harmful to our health?
- . Do you think burning is a good way of disposal? Have the students imagine the pollution effects of burning about 200 tons of these materials every day.

Activity Five

Dumping - Landfill

Take a large plastic or glass jar and fill it with moist soil. Bury the following objects so they could be seen through the side. A small piece of the following will do fine.

a metal barrette or paper clip, newspaper, plastic,
food -- apple or orange peel, aluminum foil

Explain that this is one way solid waste is handled. Periodically over the following weeks, examine the things in the jar to see if anything happens to them. Over a period of time you can expect the food and newspaper to begin to change. The metal will rust. Nothing will happen to the plastic or aluminum foil. Make a chart to display your findings.

Discussion Questions:

- . Do you know the location of any dumps or landfill sites in this area?
- . What do you think of them?
- . How does a dump pollute?
 - Water pollution from liquids and metals leaching into groundwater supply.

- Many dumps fill in wetlands which are vital to present ecosystem maintenance and flood control. Explain.
- Odours and rat infestation.
- Unsightly and uses up valuable land that is in short supply.
- . Where does your neighborhood send its refuse?
- . Why would one town want to stop another from dumping garbage on their land?
- . Why do glass, plastic and aluminum break down very slowly or not at all?
- . Can we ever get back the things we throw into the dump?
- . What happens when we run out of space to dump?

Find out from the Municipal Department of Works how much the weight and cost of waste has changed over as many years as records are available. Graph the results to show how these have increased.

C. RECYCLING -- AN ALTERNATIVE TO PRESENT WASTE DISPOSAL IS A PROCESS OF USE AND REUSE

Activity Six

1. What does this word mean?
2. Break the word into parts

RE-CYCLE

- a. What does the prefix re mean?

to do again

- b. What are some other words that begin with that prefix?

repair
redo

return
resource

renew
restore

3. What does the word cycle mean?
4. It should become clear from the above that recycle means to do or use over and over again. From old cans comes new cans, from old paper -- new paper is produced.

D. SOME RESOURCES OF THE NATURAL ENVIRONMENT ARE RENEWABLE, OTHERS ARE NON-RENEWABLE AND THEREFORE IRREPLACEABLE

Activity Seven

In order to introduce the concept of renewable versus non-renewable resources, the class should be presented with a collection of items that would normally be discarded in solid waste. These should include:

aluminum cans - bauxite
tin-plated steel cans - iron and tin
glass bottles - sand, soda ash, limestone

non-renewable
non-renewable
non-renewable
(but in plentiful supply)

paper - wood	renewable
cardboard - wood	renewable
organic waste - such as plant clippings and food scraps	renewable
plastic containers or bags - petroleum	non-renewable

The students should be helped to examine these and discuss where the raw materials to make them come from. In the ensuing discussion, it should be pointed out that aluminum, tin, steel, and petroleum are all non-renewable resources, and, as such, are being wasted daily under our present disposal system. Paper and cardboard come from the renewable source of wood, but that is being used at a faster rate than it can be produced commercially. The students should be able to categorize the solid waste presented into things which come from renewable and non-renewable sources.

Why are some materials non-renewable? Because most of them involve geological processes which took millions of years to form.

Reprinted from the activity package "Recycle (Grade 7-12)" with the permission of John Madama, Steppingstones, 10 Willow Avenue, Somerville, Mass. 02144.

A major portion of the ideas and activities in this booklet were originally developed by the Environmental Action Coalition of New York. This organization produces a variety of educational materials and teaching suggestions. For further information write: Environmental Action Coalition, 156 Fifth Avenue, Suite 1130, New York 010010.

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FOR ENVIRONMENTAL STUDIES

AN EDUCATIONAL FACT SHEET



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RECYCLE AND SAVE OUR RESOURCES

- A. The teacher should try to elicit the sequence of steps in recycling these materials. Also a comparison of how these items pollute when dumped or burned versus the effect recycling has on their fate can be made.

Aluminum - is made from bauxite, which is a non-renewable resource. It takes a great amount of electricity for aluminum to be made. Nature cannot decompose or break it down, so it presents great problems of disposal. There is a lot of public pressure for it to be recycled, since making aluminum cans from old aluminum takes only five per cent as much electricity as from the ore itself. When it is recycled, it is re-smelted and then shaped again into new cans and other items.

Tin-Plated Steel Cans - Both the iron ore and the tin for these containers are non-renewable resources. It will eventually rust and break down, so it is not as much of a problem as some other metals. However, throwing them away is a waste of valuable metals. In the recycling process, the cans are put into a huge container with holes in the bottom. This container is immersed into a caustic solution which eventually takes the tin off the cans. Then the steel cans are washed and sold as Number 1 Grade Steel. The tin is removed from the caustic solution by electrolysis and made into ingots again. It is then sold to companies requiring tin.

Paper - is made from a renewable resource -- trees. It takes 17 trees to make one ton of paper and by 1980 it is estimated that paper demands will outstrip available supply. Most paper is presently burned, destroying this valuable resource and polluting the air in the process.

Paper is recycled by first shredding it into small pieces and mixing it with water. This mixture is beaten into a mush-like pulp which flows onto a moving screen through which most of the water passes. The wood or paper fibres remain. The fibers are then pressed through heavy rollers that remove more water. Then it is sent to steam heated dryers and there emerges a new paper. You can make recycled paper in class!

. By ripping a piece of paper you can see the wood fibres that compose it.

Glass - is made from soda ash, sand and lime. It can remain in a dump or landfill indefinitely and does not break down into its organic components. Glass takes a lot of space in landfill and is difficult to burn in incinerators. To be recycled, it must first be sorted by color at the recycling center, and crushed into small pieces or cullet. The cullet is melted down into a solution and flows out of the vat slowly into the area where it is molded again into glass containers. Other products made from recycled glass bottles are insulation, and road patching material.

B. After these concepts have been grasped, the following activity can become a research project for small groups or individuals. Suggested topics for the groups could be: The Story of A

- . Aluminum Can
- . Plastic Tube
- . Cardboard Box
- . Tin Can
- . Glass Bottle

Reproduce and give each student the following questions to help them tell about their particular resources.

THE STORY OF THE _____

I am a _____ container. Please tell my story by finding answers to the following questions:

1. What do I look like?
2. Why do I have a label?
3. What are some of the things I am used for?
4. What am I made of?
5. Where do my manufacturers get the raw materials to make me?
6. Are there large amounts of my raw materials to make more of me in the future?
7. How many years will my raw materials probably last?
8. Is there any pollution of the land, the air, or the water, when companies extract my raw materials from the earth? If so, how?
9. How do manufacturers change the raw materials to make me?
10. Does the changing of my raw materials cause pollution of the land, the air, or the water? If so, how?
11. Am I thrown away after I am used?
12. Do I pollute the air if I am burned? If so, how?
13. Do I break down into earth again if I am buried? If so, how?
14. Do I disintegrate if I am thrown into a river, lake, or ocean? If so, how?
15. Try to think of some ways in which I could be re-used?
16. Can I be recycled? Am I recycled? Where am I recycled?
17. What happens to me when I am recycled?
18. Who pays the real cost for manufacturing and disposing of me?
 - The manufacturer who makes me?
 - The company which uses me?
 - The consumer who buys me?
19. Who is responsible for disposing of me? Who pays the cost for disposal?
20. Do you think I am a good container? Why or why not?

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AN EDUCATIONAL FACT SHEET ABOUT WASTE

HOW TO PUBLICIZE A RECYCLING DRIVE

A recycling drive is a special event, sometimes a day and sometimes a month in length, but it has a definite beginning and end. Good publicity is essential to its success. There are two major aims in publicity: (1) to gain high participation in the project and (2) to teach participants how to recycle in their home.

FIRST STEPS

1. Pinpoint responsibility for publicity to an individual or committee.
2. Decide how large an area your drive will cover (e.g., 4 square blocks, a school community, a municipal area). How many households are there? How do people get information in the area -- is there a local newspaper, active neighborhood association, any well-used bulletin boards?
3. Get publicity contacts and ideas from a local group which has successfully run projects similar to yours (rummage sales, neighborhood beautification campaigns, walk-a-thons).
4. Select several publicity ideas from those presented below and consider the following: (1) How many people will such publicity reach? (2) Will the people reached be those most likely to participate? (3) What kinds of expertise and how much human labor will be involved in the preparation and distribution of the publicity? (4) How much will materials and labor cost? (5) Can donations be found to cover these costs?
5. Plan the timing of publicity. A small neighborhood paper drive should be publicized at least 2-3 weeks in advance; planning and publicity for April Earth Day events which involve the collection of great amounts of recyclables can begin as early as February.

GETTING THE WORD OUT

CANVASSING

This is door-to-door contact, with or without a printed leaflet. The aim is to reach all households in the drive's area with person-to-person information about your project. It is feasible only when you have a number of volunteers, but it is enormously effective. Expect it to take time: many people will have questions about how to prepare recyclables, what your organization does, and what recycling is. If you have a leaflet, you can leave it at households where no one is home (design is to be a door knob hanger, or attach firmly to door or slip into mail slot in door; it is illegal to put into mailbox). Since you want to encourage

people immediately to begin saving and sorting recyclables for you, canvassing can take place weeks before the actual drive. A follow-up canvass, perhaps one week before the drive, will serve to remind participants. For follow-up, a local business may be willing to lend you a reverse phone directory (organized by street) so that you can call instead of visit.

LEAFLETS

A leaflet gives people information about your project they can keep -- and use when they need it. Tell the reader who is sponsoring the drive, when it will be, where it will be, what materials will be taken, and how they should be prepared. The entire leaflet should be readable in about one minute because people may not be willing to take any more time at this early stage. Illustrations, bold printing, colored ink, and colored paper all help attract attention. A one-sided leaflet can also be used as a poster.

The greatest challenge of a successful leaflet is not design, but distribution. Use existing delivery systems whenever possible -- schools may send home your leaflets with students, or newsboys might deliver a notice of your paper drive with the newspaper. Ask grocery stores if you can leave leaflets at check-out stands for customers to take; perhaps the clerks will even stuff them in the bags for you. If yours is a non-profit group with a bulk mailing permit, design the leaflet to be a mailer (with return address and bulk permit number) and call the Post Office for regulations on preparing third-class mailings -- the cost is about one-fourth that of a regular third-class mailing. Another possibility for mail distribution is to enclose the leaflet as a bill stuffer with phone, electric, or doctor bills.

POSTERS

A poster attracts the public's attention to your project. Don't depend on it alone to bring in a lot of materials for your drive, but you can use it as an initial announcement (before distribution of leaflets, press releases, etc.) or as "on-the-street" reinforcement of other publicity.

Keep the poster simple, uncluttered. As with the leaflet, make your information stand out by using strong colors, attractive lettering or type, and uncrowded layout. Posters can be handmade, printed on an offset press using colored ink or colored paper, silk-screened, typed or drawn on a stencil and mimeographed. A heavy-duty poster with tear-off section (perforated) for take-home information can be designed.

Posters can be hung throughout the community on bulletin boards and in windows; laundromats and grocery stores are particularly good places. If you put up posters on bus stop sign poles and other such locations, be sure to take them down when your project is through as they can easily become litter.

PRESS COVERAGE

Coverage of your drive in the newspaper and, if appropriate, on radio and TV, not only provides needed information to a wide public but legitimizes your project in a way only an outside voice can.

Press releases can announce a drive, report on its progress, cover special problems or successes, and present the results of the drive (the amount of money earned, tonnage recycled, how the money was spent). Keep the release to the basics -- what, when, where, how, and why. The more like a news story it's written, the more likely it will be used as you wrote it. Deliver your releases personally or follow up with a phone call.

Visit the community newspaper office. Take all printed information about your project. Ask for an announcement of the drive and suggest ideas for pictures and feature articles. One eastern Oregon newspaper used the "Recycling Handbook" cartoons in advertising a local project; each week, prior to the once monthly drive, it printed a different cartoon showing how to prepare a particular recyclable, along with details about the drive. The Oregonian and Oregon Journal will be much more likely to print news about a city or region-wide drive than a neighborhood project.

Releases can be sent to local radio and TV stations as well -- but choose avenues that will reach the particular community involved. There are about 30 radio stations in the Portland area alone, many of which serve specialized age or musical interest groups. A station headquartered in a certain area is often willing to publicize a project in that community even though its broadcast range is much wider. Do send releases to all area TV stations, as recycling makes a good picture story.

Put out a release at the end of your drive, informing the public where it can take recyclables on a continuing basis. It's harder to get people to start recycling than to get them to stop.

CALENDAR ANNOUNCEMENTS

While their audience will be smaller than for regular news coverage, the calendars of events announced by newspapers, community newsletters and TV and radio public affairs shows should not be overlooked.

PUBLIC AFFAIRS SHOWS

For in-depth coverage of your project, TV and radio stations have taped or live community interview shows. (One drawback is that they are generally aired during the early morning hours or on Sunday.)

PUBLIC SERVICE ANNOUNCEMENTS

This is an excellent way to reach vast numbers of people. Before making a radio or television spot, be sure to contact the stations you hope will use it. Find out their PSA requirements and whether the audience you want to reach is the audience they serve. For example, one station may receive 400 spots a week from organizations, but use only 25, chosen for widest public interest because its audience is 400,00 people between the ages of 18 and 34. To qualify for free public service advertising, the group which sponsors your drive must be a registered, non-profit corporation.

Radio spots can be taped or written. Some stations may ask you to come to the studio and tape your announcement according to their format; the station then plays the announcement frequently for several days. A written spot can be equally effective. Since it is to be read live by an announcer, use short, active sentences. Ten, twenty, thirty, and sixty second spots are used.

A simple slide TV spot with written script (10, 20, 30, 60 seconds -- at least one slide to every five seconds of copy) can advertise a major recycling event, such as a city-wide Earth Day drive. Often, TV stations will help you make a spot.

HELP FROM THE COMMUNITY

A particularly efficient and often forgotten method for spreading the word about local projects is help from the active community organization. Schools, PTA, neighborhood associations, community action agency, churches, service clubs, and youth groups should be contacted early for assistance. They can announce the project at assemblies and meetings; enclose your leaflet in their regular mailings to members; mention the drive in their newsletters; if they want to do a service project, they may even help you with such activities as canvassing.

GOVERNMENT SUPPORT

Finally, you might inform the city council of your project and ask for a resolution of support. This can be publicized in a news release. At the same time, check on any regulations which might affect your project.

This article has been adapted with permission from the Recycling Information Office, Department of Environmental Quality, 1234 S.W. Morrison, Portland, Oregon, U.S.A.

FACTS

FOR ENVIRONMENTAL STUDIES



Ministry
of the
Environment

Ontario

SELECTING A LANDFILL SITE

Each year our society produces more and more waste material. Handling and disposal of it in a practical and economic manner has been a heated issue in almost every Ontario community.

While recycling and resource recovery offer an ideal solution, today's technology and markets are not ready to cope with the five million tons of household garbage produced every year in Ontario. It is impossible to recycle or reclaim all of this material today. In addition, after subjecting waste to all possible reclamation processes, some residue will still remain which must be disposed of, even if it is just the ashes left after incineration.

For this reason, whether we like it or not, sanitary landfill must play a role in all of our planning decisions regarding waste management.

Landfill Site

A sanitary landfill site is an area where waste is deposited under controlled conditions and compacted and covered at regular intervals. Whenever any part of a fill area has reached full capacity, a final layer of cover area is placed on top. Later the area can be used for parkland or for other recreational purposes.

Choosing the location of a sanitary landfill site is a lengthy and painstaking process. It involves the consideration of a wide variety of technical, physical, social and economic parameters.

Physical and Social Constraints

Existing Facilities: Land which is presently being used or is zoned for future use as parkland or conservation areas or transportation systems is not likely to be selected. Nor are areas which could be affected by truck traffic, noise and dust. This protects residential communities.

Agricultural Land: Canada land inventory maps available from the Ontario Ministry of Agriculture and Food in Guelph indicate the agricultural capability of the land in question. There are 7 site classes ranging from high agricultural use or potential (Class 1) to no capacity (Class 7). Naturally prime agricultural land would not be used for a landfill.

Forest Vegetation: Woodland quality is determined using a high, medium or low rating. These designations are given according to the composition, size, crown closure and quality of the forest vegetation.

Unique Flora and Fauna: Potential sites are checked to see if they are on or near biologically sensitive areas that have unique flora and fauna.

Visual Impact: This factor relates to the expected view of the landfill from the surrounding area. Is there any existing screening potential such as a hill or a woodlot?

Archaeological Sites: Information on historical sites can be obtained from the Ministry of Culture and Recreation, the Royal Ontario Museum and the National Museum of Man in Ottawa.

Hydrogeologic Constraints

Water Resources: Leachate generated in a landfill site by the decomposition of refuse can cause serious deterioration of both ground and surface water. Obviously then, all sites which could potentially offer a hazard to water resources are eliminated.

Aquifer Connection: If the soil or rock at or just below the surface is permeable -- allows free access of liquids through it -- then these zones are undesirable for the siting of landfills.

Floodplains and Wetlands: Areas of high groundwater levels or those prone to periodic flooding are unsuitable for proper landfilling operations. Thus, valleys, creeks and many swamps are considered poor areas.

Buried Valleys: Buried bedrock valleys could be sources of groundwater and should be avoided.

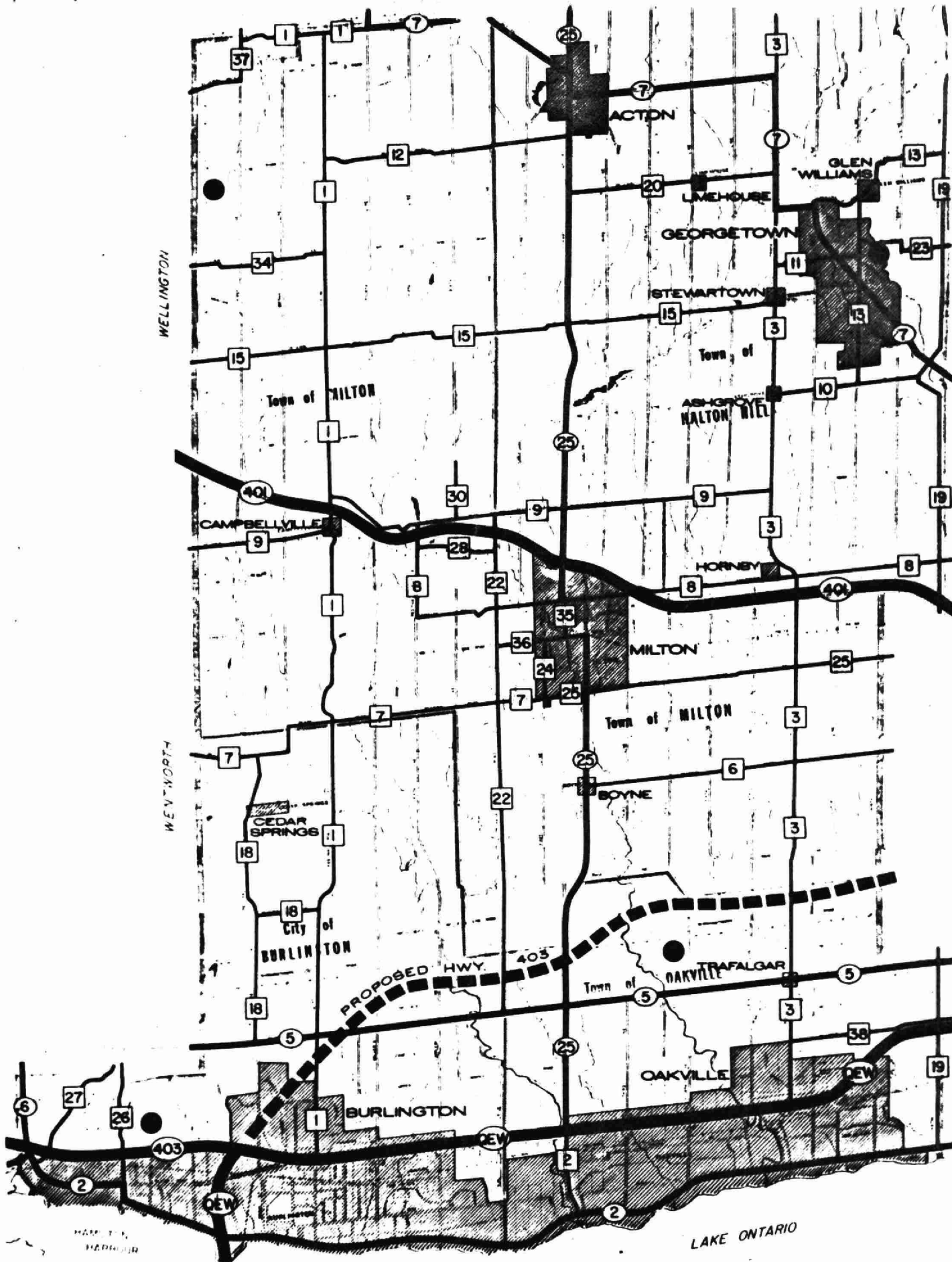
The attached maps can give students some idea of the procedures involved in selecting a landfill site. Let your students evaluate the information given on the three maps -- Existing Facilities, Map No. 1, Hydrogeologic Constraint Areas, Map No. 2 and Hydrogeologic Landfill Suitability, Map No. 3 -- and then decide where to locate a site. An area roughly one mile square is needed. Map No. 4, Possible Landfill Locations, gives the answers.

Additional Suggestions

Choose an undeveloped area and let the students investigate the possibility of locating a site there.

Assign students to investigate the rationale behind the location of an existing site.

Visit a landfill site and using the Ontario Ministry of the Environment's educational fact sheet: A Visit to a Land Site -- examine the operations under way.



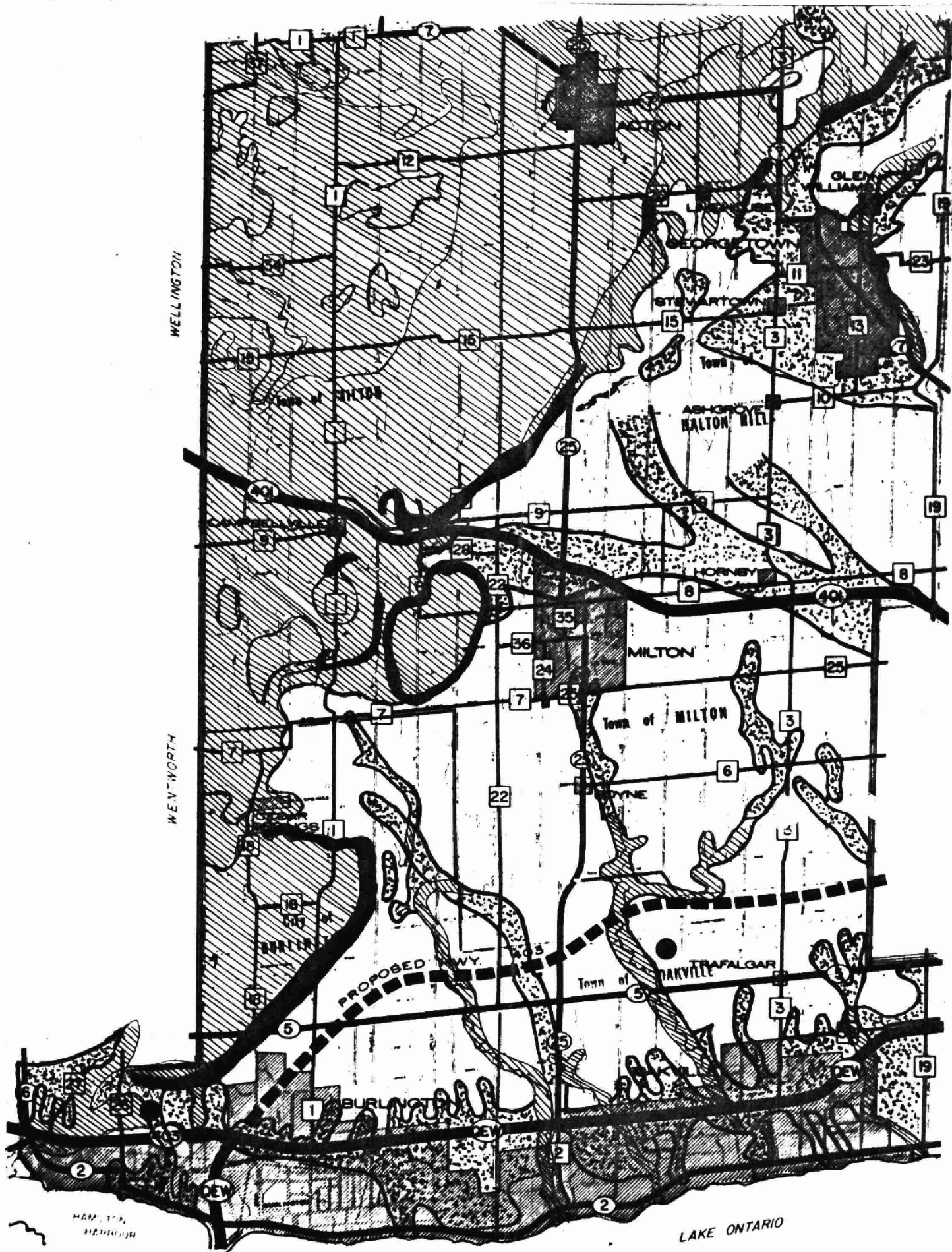
LEGEND:

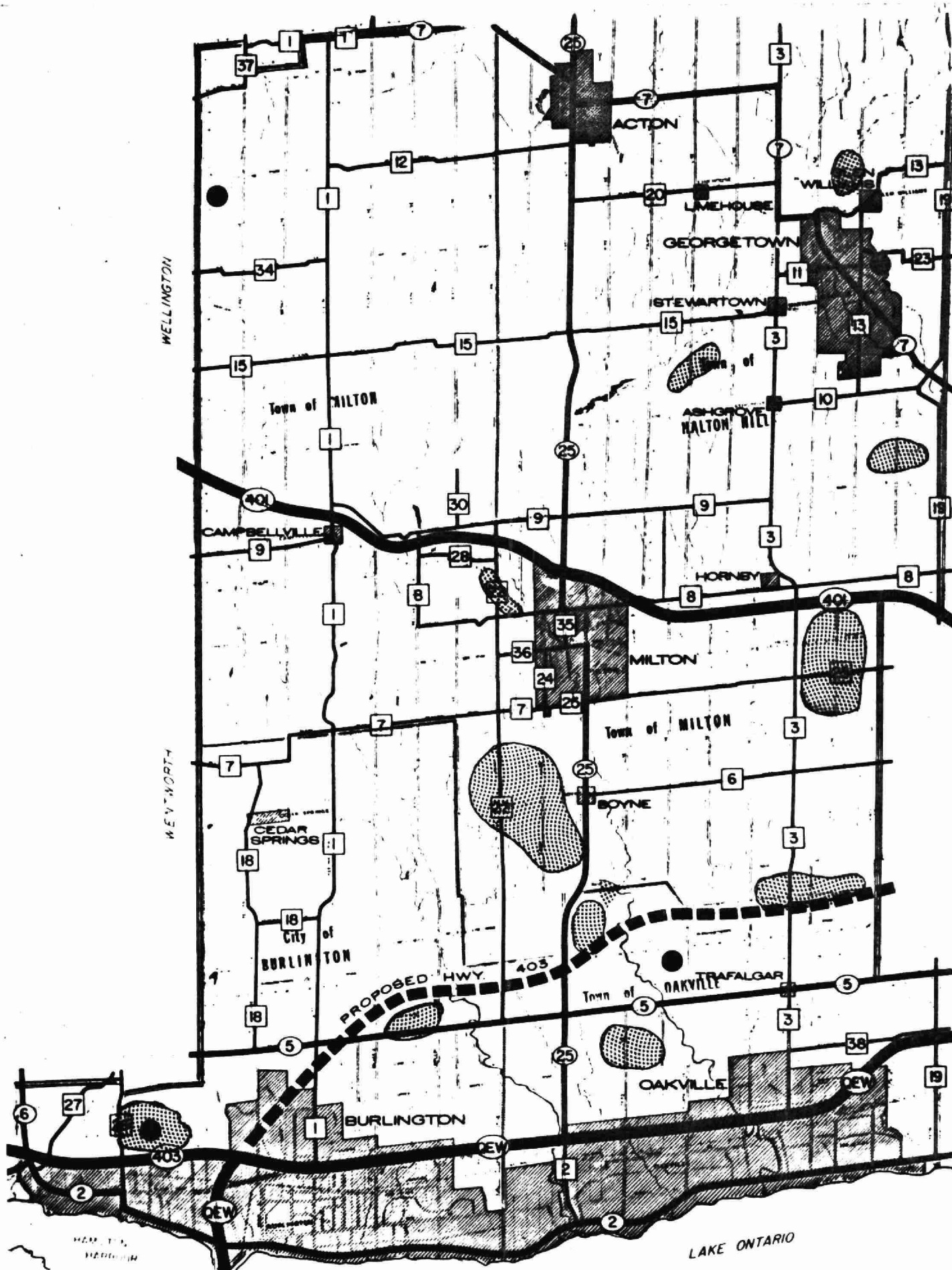
- EXISTING LANDFILL SITES
- BUILT-UP AREAS
- 25— KING'S HIGHWAY
- 3— REGIONAL ROAD

1

Existing
Facilities







LEGEND:



POSSIBLE LANDFILL LOCATIONS.



FACTS

FOR ENVIRONMENTAL STUDIES



Ministry
of the
Environment

Ontario

About Noise

ACTIVITIES TO STUDY NOISE

Recordings



Students can make five-minute recordings with portable tape recorders in different areas of the school. The sound recording level should be set the same at each location. Try to make several recordings of the same spot at different times of the day.

Back in the schoolroom, the class might attempt to identify the sounds which they hear on the recordings.

Do the noise levels change during different times of the day? Why? What can be done about the noise in each area?

Noise Levels

Use the walk-away test to determine the overall noise condition of your school. Students can work in pairs with each pair given a text book and a data sheet. The data sheet should have the following information: Names in group; time of day; locations of noise level tests and the noise level. To use the walk-away test, one student stands at a fixed location while the other student, starting at a distance of two feet, backs slowly away. The student standing at the fixed location should read from the text in a normal speaking voice. It is important that the speaker not raise his voice in order to maintain communication. When the person walking away can only understand a scattered word or two in a 10-second period, the listener should stop backing away. Measure the distance between the speaker and listener and compare the distance to the chart on the following page.



Noise Level	Distance Where Understanding Becomes Very Difficult	Noise Acceptability Level
#1	More than 70 feet	Very acceptable
#2	26 - 70 feet	Acceptable
#3	7 - 25 feet	Not very acceptable
#4	Less than 7 feet	Unacceptable

Kinds of Noise

Listen to tape recordings of various sounds which can be collected from every conceivable location. Have students try to identify these sounds and evaluate. Which sounds do the students consider noise? Why? What qualities of sound make it "noisy"? What changes can be made in the noises to make the resulting sounds tolerable? Pleasant?

What ranges of sound qualities (volume and frequency) are pleasant? Tolerable? Intolerable? What makes them pleasant, tolerable or intolerable?

Other Activities For Senior Years

1. Look at the various aspects of noise. For example, using the decibel scale, what is the threshold frequency? Threshold of pain? Intensity that produces hearing damage?
2. What are the effects of noise pollution on man and other animals. Can man adapt to increasingly higher noise levels?
3. Investigate the chief sources of excessive noise. You might include here a study of one area of your community.
4. What are the laws regarding noise pollution? Who sets them? How strictly are they enforced?
5. Design a sound park, museum or even hold a participatory sound concert!
6. Plant Experiment: Grow 2 plants of the same species in two different sonic environments (e.g. pleasant and noisy). Plot the daily growth rate on chart.
7. You might investigate some specific sources of noise, such as power lawnmowers, motorbikes, sports cars, transport trucks, snowmobiles and motorboats. Are the noise levels produced by these devices necessary? How could the noise be decreased?
8. Do a noise survey! This could involve various formats such as multiple choice or general opinion polls. You may want to know what many people know about noise, what they want done about it, etc.
9. Investigate different sonic environments for their noise factors.
10. Using what you have, learn about noise pollution, educate others.

11. Examine different materials to see which absorb sounds better than others. Have the class try to make their classroom as soundproof as possible.
12. An annoyance experiment: Give some work that needs a fair bit of concentration and play a tape recorder with infrequent loud noises. Have a control group. Test both groups on contents of work studied. Compare and discuss results.
13. Look at different laws in different areas such as municipalities, provinces or even countries. Compare them to your local areas.
14. Make a literary search of different quotes on sound.
15. Investigate the idea of continuous and discreet sounds.
16. Investigate how your voice goes through different materials.
17. Keep a sound diary.
18. Select a variety of different sonic environments. Take a group of people to each, blindfolded. Have them sit or stand at each spot for a few minutes. Afterwards ask them prepared observation questions on each environment. Compare and discuss results.
19. Conduct a study of traffic noise on a residential street. First tabulate the amount of traffic passing a given point on the street, by taking regular checks at different times on different days. From this you may calculate the daily flow of different kinds of vehicles on the street. Next, interview local residents and ask them to estimate the daily flow of different kinds of vehicles on their street. Compare and discuss results.

Bibliography

1. Noise Kit by Toronto Pollution Probe, 43 Queen's Park Cres., Toronto, Ontario \$5.00.
An excellent kit containing record, booklet, a map and general activities cards. Suitable from Grade 4 and up.
2. Noise, The Unseen Enemy by M. Barbara Scheibel, Pendulum Press Inc. West Haven, Connecticut, 1972.
3. Noise by Rupert Taylor, Penguin Books, Toronto, 1970.
4. Noise Pollution and Sounds and Noise Environmental Education Centre, 13 Veterans Drive, Oteen, North Carolina.
5. The Box on Noise by R. Murray Schafer, Harry Smith and Sons Ltd., 1150 Homer Street, Vancouver, B.C.